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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FOUAD A. FAOUR
and BRANDON GREGORY GREINER

Appeal 2009-002353
Application 10/817,265
Technology Center 2800

Decided:¹ July 21, 2009

Before KENNETH W. HAIRSTON, ROBERT E. NAPPI,
and ELENI MANTIS MERCADER, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

This is a decision on appeal under 35 U.S.C. § 134 of the rejection of claims 1-4 and 7-19.² We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

INVENTION

The invention is directed to a system that enables temperature measurement of an integrated circuit through the use of thermal diodes. *See generally* Specification 1-3. Claim 1 is representative of the invention and reproduced below:

1. An integrated circuit, comprising:
 - a number of pads;
 - a constant current source to provide a current;
 - a thermal diode that receives said current, said thermal diode being coupled between first and second ones of said pads; and
 - an analog to digital converter to i) receive a forward bias voltage of the thermal diode, and ii) output a digital representation of the forward bias voltage;wherein a third one of said pads is provided to receive a reference current, said third pad being coupled to an input of said constant current source, said reference current serving to control the constant current source.

REFERENCES

Audy	US 5,195,827	Mar. 23, 1993
Davidson	US 5,639,163	Jun. 17, 1997
Vergis	US 6,453,218 B1	Sep. 17, 2002

² Claims 5, 6, and 20 were cancelled by Appellants in the Request for Continued Examination filed Aug. 9, 2006.

Deng

US 6,911,861 B2

Jun. 28, 2005
(filed Aug. 7, 2003)

REJECTIONS AT ISSUE

The Examiner rejected claims 1-3 and 7-17 under 35 U.S.C. § 103(a) as being unpatentable over Davidson in view of Deng. Ans. 3-5.

The Examiner rejected claims 4 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Davidson in view of Deng and Vergis. Ans. 6-7.

The Examiner rejected claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Davidson in view of Deng and Audy. Ans. 7-8.

ISSUE

Rejection of claims 1-3 and 7-17 under 35 U.S.C. § 103(a) as unpatentable over Davidson in view of Deng

Independent claims 1 and 7

Appellants argue on pages 6-8 of the Appeal Brief that the Examiner's rejection of claim 1 is in error. Appellants argue that neither Davidson nor Deng teaches a constant current source, outputting a constant current based on the received reference current, or a third pad that receives a reference current. Br. 7. Appellants additionally argue that it is not obvious to combine Davidson with Deng. Br. 8. Appellants present similar arguments directed to independent claim 7 on pages 9 and 10 of the Brief.

Thus, with respect to independent claims 1 and 7, Appellants' contentions present us with two issues: (1) Have Appellants shown that the Examiner erred in finding that Davidson in view of Deng teaches a constant current source, outputting a constant current based on the received reference

current, and a third pad that receives a reference current? (2) Have Appellants shown that the Examiner erred in finding that it is obvious to combine Davidson with Deng?

Claims 2, 3, and 8-17

Appellants argue on pages 9 and 10 of the Appeal Brief that claims 2, 3, and 8 -17 are allowable based upon their dependency on claims 1 or 7. Thus, Appellants' arguments with respect to the Examiner's rejection of claims 2, 3, and 8 -17 present us with the same issues as claims 1 and 7.

Rejections of claims 4, 18, and 19 under 35 U.S.C. § 103(a)

Appellants argue on pages 10 and 11 of the Appeal Brief that claims 4, 18, and 19 are allowable based upon their dependency on claims 1 and 7. Thus, Appellants' arguments with respect to the Examiner's rejection of claims 4, 18, and 19 present us with the same issues as claims 1 and 7.

FINDINGS OF FACT

Davidson

1. Davidson discloses a thermal sensing circuit that connects to a power supply circuit through two pads (C4B and C4C). Col. 2, ll. 45-60 and Fig. 2.
2. The power supply circuit contains a voltage source (Vp) and a resistor (R1 and R2) between the voltage source and each of the thermal sensing circuit's pads (C4B and C4C). Col. 2, ll. 45-60 and Fig. 2.

3. In order for the thermal sensing circuit to operate, the resistors are selected to establish a ratio of current between D1 to D2 as 100 to 1. Col. 3, ll. 6-13 and Fig. 2.

Deng

4. Deng discloses a current generating power source that contains a bond gap voltage (VBG), three transistors (110, 112, and 114), and a bond pad (108). Col. 2, ll. 32-49 and Fig. 1.
5. The circuit generates an output current based upon and equal to the reference current. Col. 2, ll. 56-61 and Fig. 1.

PRINCIPLES OF LAW

On the issue of obviousness, the Supreme Court has stated that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . . [A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Id. at 417. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 419-420.

ANALYSIS

Rejection of claims 1-3 and 7-17 under 35 U.S.C. § 103(a) as unpatentable over Davidson in view of Deng

Independent claims 1 and 7

Appellants’ arguments have persuaded us that the Examiner erred in rejecting claim 1. Independent claim 1 recites “a number of pads; a constant current source to provide a current; ... wherein a third one of said pads is provided to receive a reference current, said third pad being coupled to an input of said constant current source, said reference current serving to control the constant current source.” Independent claim 7 recites similar limitations. Appellants argue that neither of the references discloses a constant current source, receiving a reference current and outputting a constant current based on the reference current, or a third pad. Br. 7-8. We disagree with this argument. However, Appellants additionally argue that the Examiner has not provided a valid explanation as to how and why the two references would be combined. Br. 8. We agree with Appellants on this point.

As stated *supra*, the Supreme Court has stated that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416.

The Examiner finds that the combination of the current supply circuit of Deng with the temperature sensing circuit of Davidson [by attaching Deng's pad (108) and output current to Davidson's pads (C4B and C4C) respectively] would obtain more accurate results by varying the current proportionally to the temperature change. Ans. 5. In other words, the combination does no more than yield predictable results. We disagree.

The current supplied to Davidson's pads (C4B and C4C) is required to establish a ratio of 100 to 1 in order to operate the thermal sensing circuit. FF 3. The current supplied to Deng's bond pad (108) and Deng's output current have a ratio of 1 to 1. FF 4, 5. Therefore, it is unclear how the Davidson temperature sensing circuit will operate with a current ratio of 1 to 1 or it is unclear how the Deng current generating power source will create a current ratio of 100 to 1. While the Examiner states there is nothing in either disclosure that dissuades the combination (Ans. 10), the Examiner does not provide evidence to show how a circuit that requires a particular current ratio can be used with a circuit that supplies a completely different ratio. As a result, the Examiner has not overcome the initial burden of showing how or why the combination of Davidson with Deng yields a predictable result. Therefore, we will not sustain the Examiner's rejection of claims 1 and 7.

Claims 2, 3, and 8-17

Appellants' arguments have persuaded us of error in the Examiner's rejection of claims 2, 3, and 8-17. Claims 2, 3, and 8-17 ultimately depend upon one of claims 1 or 7. Appellants' arguments present the same issues discussed with respect to claim 1 (Br. 9). Therefore, we do not sustain the

Examiner's rejection of claims 2, 3, and 8-17 for the reasons discussed *supra* with respect to claim 1.

Rejections of claims 4, 18, and 19 under 35 U.S.C. § 103(a)

Appellants' arguments have persuaded us of error in the Examiner's rejection of claims 4, 18, and 19. Claims 4, 18, and 19 ultimately depend upon claims 1 and 7, respectively. Appellants' arguments that the rejection of these claims is in error for the reasons discussed with respect to claims 1 and 7 is persuasive for the reasons discussed *supra* with respect to claims 1 and 7. We do not find that the additional teachings of Vergis or Audry make up for the deficiencies noted in the rejection of claims 1 and 7. Therefore, we will not sustain the Examiner's rejection of claims 4, 18, and 19.

CONCLUSIONS OF LAW

Under 35 U.S.C. § 103(a), Appellants have shown that the Examiner erred in finding that it is obvious to combine Davidson with Deng.

SUMMARY

The Examiner's rejection of claims 1-4 and 7-19 is reversed.

REVERSED

KIS

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